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ABSTRACT

The overall aim of this project is to continue the investigation of the effectiveness and practicability of a home-centered technique for cognitive, language and personality development of mother and child to help break the poverty cycle. The plan represents an innovation in family services which, if effective, would extend the reach of the professional and, in the long run, reduce the needs for such services as participants become more capable of meeting their own needs. The home or "backyard" center is the home of a mother in the project, who comes from the disadvantaged population. Workload consists of four days (eight sessions) with children and one day of in-service educational training. Although aides and advocates are used in a variety of projects, the type of professional responsibility, decision making and role assignment of the non-professional in this project is unique. The search plan of the project, methods of procedure, treatment development of materials, home center, and parent education are topics discussed in this report. (Author/MK)

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**A HOME LEARNING CENTER APPROACH
TO EARLY STIMULATION**

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RESEARCH PLAN

A. Introduction and Specific Aims

The purpose of this project is to continue the investigation of a home-oriented approach into intervention in the lives of very young children in a way which might help break the poverty cycle. The project demonstrates an approach which might become fully functional as a part of the operations of Parent-Child Centers. It also offers a possible model for Day Care. The goal of the project is to attempt to simultaneously raise the chances that a young child will reach a higher level of intellectual and personal development, and that the significant adults in his life will gain in competence and feelings of self-worth. This project is a combination of research and demonstration, containing phases of basic research, material development, and field testing of both materials and a dissemination process.

1. Status of current work in the area

Although there is considerable current interest in infant and early child stimulation in the first three years of life, most of the studies have been of a laboratory nature (White, 1964; Lipsitt, 1967; Munt, 1966; and Ricciutti, 1965) or of a longitudinal, non-intervention type (Bloom, 1964; Kagan and Moss, 1962; Bayley, 1967; Escalona, 1967; and L. Murphy, 1962). Field studies which attempt to use intervention procedures are being conducted by Schaeffer in the Washington area and Caldwell at Syracuse. Considerable investigation, but of children above the age of three, has been conducted by Gray and her colleagues (1966). In general, the model of these field studies has been to use well educated personnel as the intervenors either directly with the children or with the parent in a home visitor role. Non-professionals have been used in many of the Head Start programs and teacher aid work as well as in some of the medical intervention programs. However, in these programs, the non-professional is usually supervised on the job. So, current work with young children (except for this project) does not use non-professionals in independent roles. Intervention programs usually deal with a broad spectrum of behavior, with a focus on language and cognition. Preliminary findings indicate gains in general IQ after tutoring one year olds (Schaeffer, 1967) and the relative superiority of a combined home-visitor and center approach in the performance of four and five year olds (Gray, 1966). Gordon (1967) used the non-professional as an intervening agent. The stimulation materials taught to parents were based primarily on a Piagetian cognitive orientation (Gordon and Lally, 1967). Preliminary results indicate that such a program leads to improved cognitive and language performance of infants (Gordon, 1967). There is a paucity of information about intervention programs for two-to-three year olds, especially programs which are longitudinal in nature, in which the families have participated in stimulation procedures before the child reached two years of age. This proposed project will attempt to supply information about that time period.

a - Can a combined home visit and home learning center approach, using non-professionals as the key educators of parent and child, be sustained for children ages two to three and their mothers?

b - Can intellectual and personality stimulation materials be developed which can be easily taught to the mother and child by non-professionals?

c - Does early child stimulation, provided through a program such as this, have continuing effects as youngsters reach kindergarten and the beginning of school years?

d - The specific hypotheses to be tested are that:

- (1) At age three, the child's intellectual performance will be a function of length and timing of training. The order of performance will be from those groups with the most to those with the least training. Where groups have equivalent time in training, the order will be from earliest to latest. The following measures will be used:
 - (a) Peabody Picture Vocabulary test (at age 2 and 3)
 - (b) Bayley (at age 2)
 - (c) Project materials (at age 3)
 - (d) Leiter International Scale (at age 3)
 - (e) Stanford Binet (at age 3)
- (2) At age three, the child's self-concept will be a function of length and timing of training. Self-concept will be measured by the Long, Henderson, and Ziller (1967) technique.
- (3) During the time in the home learning centers, children will show a trend toward those behaviors usually associated with positive self-concepts.
- (4) The mother's view of herself will be a function of length and timing of participation in the parent education program. The order of performance on the interpersonal adequacy and autonomy factors of the Gordon How I See Myself Scale will be from most to least participation. Where groups have equivalent time in training, the order will be from the earliest to the latest (See Table 2 for specific order).
- (5) The number and range of mothers' social interactions will be a function of length and timing of parent education.
- (6) There will be a trend toward increased community activity in the mothers, in proportion to participation in parent education.
- (7) The above differences will continue to hold for the child and his mother up until child's age of six.

2. Rationale

The technique of using disadvantaged women as the major educational group for both mothers and children, developed at the Institute for Development of Human Resources will be employed. The present program, described in Appendix A, has already demonstrated that disadvantaged women can be selected, instructed, and placed in other disadvantaged homes to teach mothers ways to stimulate the perceptual, motor, and verbal activities of their infants.

The stimulation procedure presently in use will form the basic orientation to the proposed project. The cognitive developmental orientation, which might be called neo-Piagetian, that is, the conversion of Piagetian principles and measurement tasks into instructional activities, will be continued. The basic process of using non-professional disadvantaged women as parent educators in a home centered operation is basic to this proposal. The major change, created by the developmental status of the children (two to three years of age rather than three months to two years of age) is in the development of a small-group setting for additional instruction beyond the home visit approach. This new setting, a "back-yard center," is still home oriented. It will be in the home of one of the mothers whose child is in the program.

The importance of the earliest years of life as critical in the development of the intellect as well as the personality are generally accepted in current psychological and educational thought. However, we still lack sufficient knowledge of (1) acceptable instructional materials and tasks for providing such stimulation and (2) procedures to reach both urban and rural families whose children need such stimulation techniques. In this project, both will be interwoven within one operation.

Given the importance of early stimulation, how should it be provided? What should be done, when should it be done, in what setting should it be done, and for how long should it be provided? The present project will provide beginning answers on the child from three months to two years. We now need to ask these same questions for the two to three year old, before the child moves into more organized and institutionalized early child centers. The present project provides us with the basic orientation and ongoing population for longitudinal study. The proposed project will attempt to provide continuing answers to the questions stated above.

3. Specific Aims

The overall aim is to investigate the effectiveness and practicability of a home centered technique for cognitive, language, and personality development of mother and child, based upon the use of parent and child educators who are themselves members of the population to be served. It represents an innovation in family services which, if effective, extends the reach of the professional, upgrades the competence and importance of the non-professional, and in the long run reduce the needs for

such services as participants become more capable of meeting their own needs. The specific aims are to answer the following questions and test the following hypotheses:

Methods of Procedure

1. Sample

The sample of mothers and children consists of approximately 280 families who are in either experimental or control status in the present project plus an additional 80 families for whom participation in the project will be new. The original sample was identified at birth of the child by the Obstetrics staff of the Teaching Hospital of the J. Hillis Miller Health Center of the University of Florida. The criteria for selection, in addition to the economic code of "indigent" on the hospital admission form and residence in Alachua and 11 other surrounding counties were: single birth, no breach or Caesarian delivery, no complications to the mother or infant, no evidence of mental retardation and no evidence of mother's mental illness.

New families will be added into the longitudinal population beginning in November, 1968, in order to investigate the effects of training on children and mothers who have not previously been aware of or exposed to the project. All other control families will by that time have at least been tested. This will allow us to examine (see Table 2) the effects of varying degrees of experience with and participation in the parent education and infant stimulation work. For the child to be involved in the home learning center, his mother must agree to be visited once a week and receive instruction by a parent educator. The program will be fully explained to the mother and written consent, in keeping with the Public Health Service rules on research involving human subjects, will be obtained.

2. Treatment Plan

Tables 1 and 1A indicate the treatment plan showing the various subgroups from 1966 to date and the proposed grouping for the project. This plan will allow the testing of the effects of amount and sequence of experience on changes in performance of mother and babies. The treatment variables are thus: type and content of instruction, length and timing of instruction, and presence of instruction. Dependent variables are: changes in mother and child. Specifics are contained in the hypotheses.

The major treatment variable is instruction by a parent educator--child development trainer of mother and child. In order to provide this treatment, there are three steps: (a) development of materials, (b) training of the parent and child development trainers and (c) implementation in parent education and home learning centers.

3. Development of Materials

Tasks and materials will be initially developed at the materials development center (see Facilities for description of Early Childhood Curriculum Laboratory). The major resources for these tasks will come, as in the previous project, from Piaget, Hunt, and Bernstein. In addition, Montessori, Escalona, Gray, Smith and Miller, and Caldwell's materials will be used to suggest stated goals. They will be sequenced, materials will be organized in terms of ages, not in the project population, and re-worked. They will then be presented to the parent educators and backyard center director. This process will uncover problems in interpretation and teaching which will lead to further modification of the materials before they are introduced into the home and the backyard center. As they are evaluated in the field, new ideas will present themselves. These will be feedback to the materials center. The key role is that of the parent and child educator. Our previous work indicates the great value of this person in materials development, dissemination, and evaluation.

Figure 1 presents a flow chart of how we plan to relate the development of stimulation materials to the practical procedures for their use.

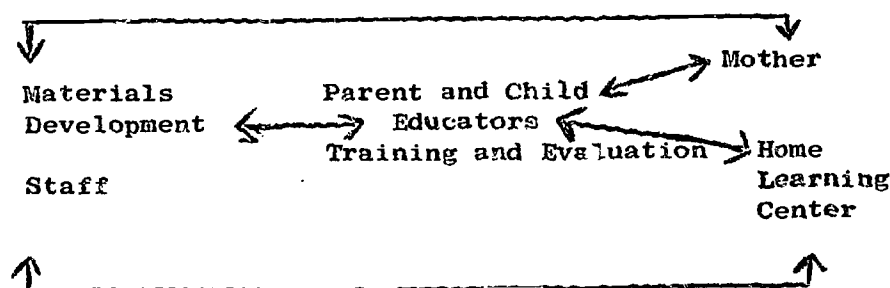


Figure 1. Flow Chart of Instructional Materials

The stimulation series will focus on three major areas of development: Language, cognitive, and personality. Although sample learning models will be designed separately for each developmental area, the operational learning models will be visible in the home center and mother-child interaction as an interaction of all three.

Children learn about the world around them through their sensory and perceptual processes and the development of these processes plays a crucial role in their cognitive development. Piaget, especially, has proposed the development of the sensory, sensory-motor, and perceptual processes as the foundation for later cognitive skills. The child develops through a succession of action, image, and word: the "pre-operational," "concrete operations," and "formal operations" stages suggested by Piaget.

The cognitive models of the study shall use Piaget's developmental theory. However, since Piaget does not offer an instructional model, we will go beyond his theory. The curriculum will include some direction, simple structure, and a planned format in order to accomplish the amelioration of learning problems manifested by disadvantaged young children. Therefore, an attempt shall be made to devise experiences which will be consistent with the current abilities and skills of these children and which can then be effectively directed toward their continued cognitive development.

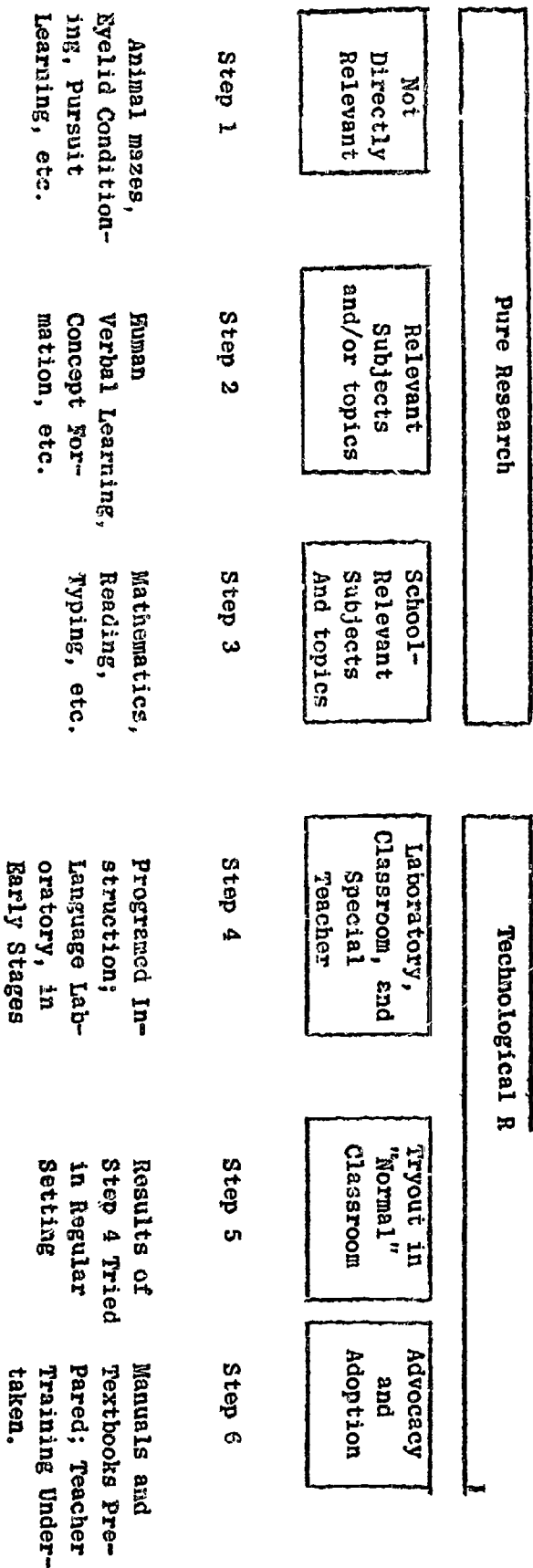


FIGURE 2. Steps in research on learning--pure research to technological development¹

1. From E. Hilgard, "A perspective of the relationships between learning theory and educational practices," in E. Hilgard (Ed.) Theories of Learning and Instruction 63rd Yearbook, Chicago: NSSE, 1964. P. 406

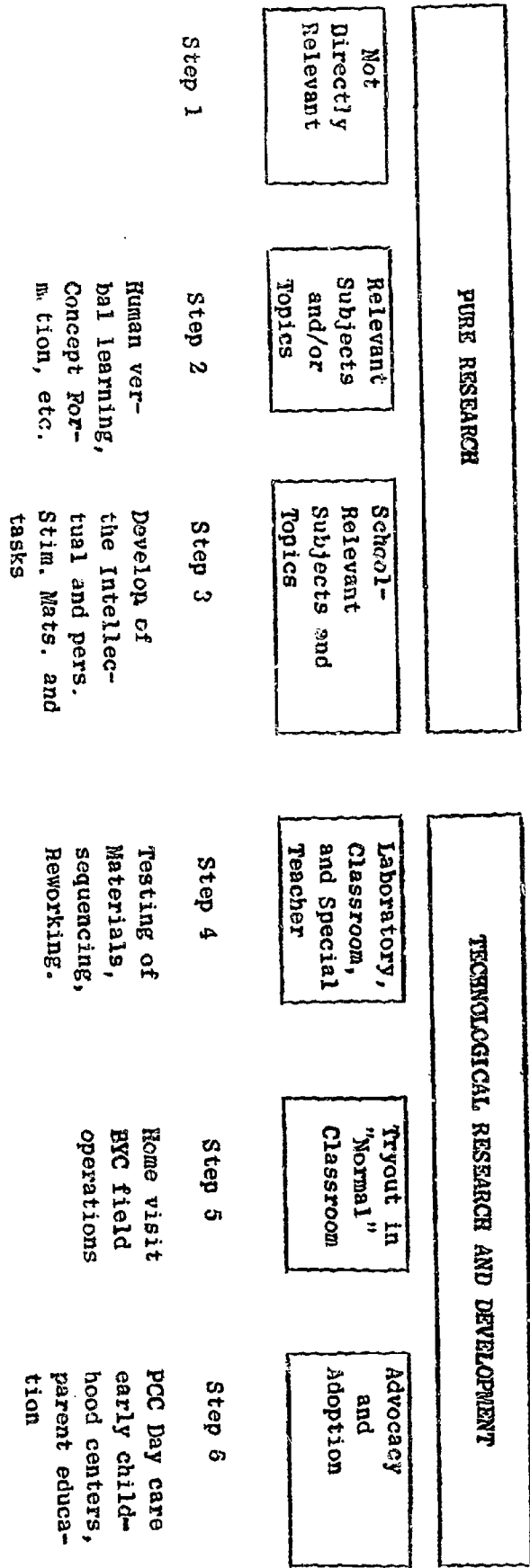


FIGURE 2A. Steps in Research on learning-- pure research to technological development (after Hilgard)

TABLE 1 Treatment Plan

Time Period		3 mo. - 1 yr.	1 yr. - 2 yr.	2 yr. - 3 yr.	Age 4	Age 5	Age 6
Group	N	10/1/66-2/28/68	6/1/67-2/28/69	6/1/68-2/28/70	6/1/70-1/31/71	6/1/71-1/31/72	6/1/72-1/31/73
B ₁ /E/E	25	Series ³	Series	BVC/HV	T	T	T
E ₁ /E/C	8	Series	Series	T	T	T	T
E ₁ /C/E	20	Series	T	BVC/HV	T	T	T
E ₁ /C/C	12	Series	T	T	T	T	T
C ₁ /E/E	3	N	Series	BVC/HV	T	T	T
C ₂ /E/E	11	.....	Series	BVC/HV	T	T	T
C ₁ /E/E	1	N	Series	T	T	T	T
C ₂ /E/C	10	.....	Series	T	T	T	T
C ₁ /C/C	9	N	T	T	T	T	T
C ₂ /E/C	13	.....	T	T	T	T	T
E ₃	46	.....	.....	BVC/HV	T	T	T
C ₃	20	.....	.....	T	T	T	T
Totals	184	804	70	105			

1. Dates of birth range from June 1, 1966 to January 31, 1967.

2. N as of January 31, 1969.

3. Series = Parent Education; N = nurse visits, no education; BVC/HV = Backyard Center and Home Visits; T = testing at birthdates.

4. Experimental totals.

Age of Child
Time Period

TABLE 1A. Treatment Plan

Group	N ¹	3 mo.-1 yr. 5/1/67-9/30/68	1 yr. - 2 yr. 5/1/68-9/30/69	2 yr. - 3 yr. 5/1/69-9/30/70	Age 4 7/1/71-9/30/71	Age 5 5/1/72-9/30/72	Age 6 5/1/73-9/30/73
E ₂ /E/E	9	Series	Stimulation	BYC/HV	T	T	T
E ₂ /E/C	9	Series	Stimulation	T	T	T	T
C ₃ /E/E	9	Other ²	Stimulation	BYC/HV	T	T	T
C ₃ /E/E	12	Other	Stimulation	T	T	T	T
C ₄ /E/E	6	T	T	BYC/HV	T	T	T
C ₄ /C/C	17	T	T	T	T	T	T
E ₄	42	.....	.....	BYC/HV	T	T	T
C ₆	20	.....	.....	T	T	T	T
Totals	124	56	56	66			

1. N as of January 31, 1969.

2. Other = parent education not using series material;
Stimulation = stimulation through parent education - program depends upon present work.

TABLE 2 Predicted Order of Performance at Age 3.

1968-69 Groups	N ¹	1969-70 Groups	N
E ₁ /E/E	25	E ₂ /E/E	18
E ₁ /E/C	8	C ₃ /E/E	
E ₁ /C/E	20		
C ₁ /E/E	14	E ₂ /E/C	21
C ₂ /E/E		C ₃ /E/C	
E ₁ /C/C	12		
C ₁ /E/C	11		
C ₂ /E/C			
E ₃	46		
C ₁ /C/C	48		
C ₂ /C/C		C ₄ /C/E	6
C ₅		E ₄	42
		C ₄ /C/C	17
		C ₆	20
Totals	184		118

1. Probable N. See Tables 3 and 3A for present N.

TABLE 3. Assignment of Children to Groups during Ages 2-3

	1968				1969												1970							
	September ¹	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August
Original Longitudinal Population ²	BYC 0	0	0	0	15	28	56	59	59	59	52	43	33	22	15	12	9	4						
Second Longitudinal Population	BYC									5	19	33	42	42	42	42	42	42	42	42	42	33	19	5
New Population ³	BYC 0	0	0	0	5	15	46	46	46	46	46	49	44	45	40	36	26	20	20	20	20	15	10	5
Total	BYC 0	0	0	0	21	43	105	105	105	110	120	120	120	104	97	90	77	66	62	62	62	48	29	10

1. By end of month.

2. Includes allowance for attrition.

3. No attrition assumption

The personality development of a child heavily depends on his interactions with his parents, friends, relatives, and others who are significant to him. His personality is influenced by communications which give him clues that permit him to define his own reality. He learns how to feel and act, what is acceptable positive and negative behavior, how to expect others to behave, how to influence the behavior of others, and what people have a right to expect from other individuals. We plan to operate the centers and teach the materials in such a way that they will enhance personality development.

4. The "Backyard Center"

The home center or "backyard center" will be the home of a mother in the project, selected so as to insure safety to the children and adequate space for a small group.

At present there are seven centers in operation. Four of the centers are in the homes of mothers in Williston, Newberry, High Springs, and Hawthorne, Florida. The other three centers are located in low income housing projects in Gainesville, Florida. We have arranged with the Housing Authorities to give the mother an extra bedroom. For example, if her family size allows her a two-bedroom apartment, the Housing Authority gives her a three-bedroom apartment, and the third bedroom becomes a backyard center. This room is used only for a backyard center and is not used by the family.

Each child will spend about four hours a week in two separate sessions at the backyard center. He will be transported to the center by the Home Learning Center Director. A graduate student will accompany her in the car to insure the children's safety. Centers will be located in neighborhoods as close to the population distribution of the children as possible so that there will be a minimum of transportation. The center will not necessarily be a permanent location but will phase in and out of existence depending upon the number of children in that neighborhood in the project between the ages of two and three. A center then is simply a home, specially equipped, where at least five children will be brought twice a week for small group instruction and activities.

The backyard center director is a present parent educator. This means that she herself comes out of the disadvantaged population. She has been trained by participation in the present infant stimulation project so that she understands the importance of early child experience and has some of the mechanics of stimulation well in hand. It is our intention as a part of the general upgrading of the parent educator that she be given even more responsibility in this new role. She will be in charge of the center. The mother in whose home these activities occur will be employed as a helper of the backyard center director. A graduate assistant (preferably male) will work under her direction for instructional activities. Since one of our major goals is increasing the competence and feelings of self-worth of members of the population, we feel this definition of the task goes toward achieving this aim, although for several practical reasons we will not be studying changes in the parent educators.

A workload for the backyard center director will consist of four days (eight sessions) with children and one day of in-service education, working with the materials and learning how to teach small groups of children. The in-service education time serves a dual purpose of preparing her for the work with the children and as a testing ground for the materials.

The parent educators were selected on the criteria of: high school graduation, unemployed or low level of employment, some experience with infants. Applications were solicited through church groups, Head Start groups, school officials, and finally the Florida State Employment Service. Two of the initially appointed white educators did not meet the high school graduation criteria. There were many Negro applicants; a few whites. The present parent educator staff consists of 14 Negro parent educators and 3 white parent educators. This is in rough proportion to the racial composition of the sample.

5. Parent Education

While the child is in the center program, the parent educator will work with the mother on a regular once-a-week schedule. This role has been well defined in the present project and represents a continuation of activity. The parent educator will, through explanation and demonstration, teach the mother activities and exercises to be used at home. The work of the mother and the work in the backyard center will be integrated so that home and center activities will complement and supplement each other. For example, if a backyard center activity deals with experiences which lead toward conservation of mass, then the mother might be taught how to play a water game with the child in which the size of the containers is changed but the amount of water remains constant.

The mother will be instructed not only in the mechanics of the task, but also in general attitudes towards use of them, and some conceptual framework and rationale for their use. The essential mode of presentation is demonstration by the parent educator and modeling by the mother. Since some of the mothers have extremely low levels of literacy or are illiterate, if the program requires reading to the children, the parent educator may have to absorb this role. For those mothers who are able to manage simple reading materials, the parent educator will teach ways of reading to children. The parent education program will also require introduction of materials into the home which would normally not be present. In the present work with infants, we use materials already in the home. Work with two to three year olds will require the introduction of certain materials (clay, blocks, books) into the home on either a permanent or temporary loan basis.

6. Research Procedures

Tables 1 and 1A show the various treatment groups. The instruments to be used at our pre and post test measurement at ages two and three are the Bayley (at entry into the Home Learning Center) and the Stanford-Binet (at age three), the Peabody picture vocabulary test, the Leiter

International scale (at age three only) and performance on the materials especially designed for this project.

As Gray and Miller point out, "devising measures even remotely comparable from infancy to later childhood is an extremely difficult task." (Gray and Miller, 1967, p. 476). Stott and Ball (1965) factor analyzed a number of preschool tests and we will use their factors for analyzing the Standard-Binet material. At the thirty-six month level, the relevant factors are: Concept naming, memory for symbolic systems, visual cognition and memory for semantic systems (Stott and Ball, 1965, p. 118-120). Based upon their evaluation of several tests, they report that a single IQ score gives an inadequate representation of the child's performance. Our present work with the Griffiths scale indicates that subscores rather than general IQ scores are perhaps the most meaningful.

The use of the project materials themselves in effect follows the concept developed by Loretan (1966) for the New York City Public Schools. Stated simply, the concept is that a measure of intelligence or intellectual performance can perhaps be seen as closely related to instruction. In effect, the design is: teach a child something and measure his ability to learn based upon whether he learned what was taught. This experimental rather than innate view of intellectual development is in keeping with the viewpoint of Hunt (1961).

Since this is a phase of a longitudinal study, in which data will be available for several years, a single factor co-variance design (Table 2), using an earlier test as the co-variate, will allow testing of effects of amount and time by pooling, at age three, those groups which in their first year of life were pure control or visited by a nurse on a once-a-month basis. This of experience, two years of experience, one year of experience, with no previous participation as controls, one year of experience with some participation as controls. It will also allow analysis of the contribution of time of experience to scores. In addition to this analysis, t-tests will be calculated using discrete groups.

In the area of self concept, no adequate measures exist for children of this age. It is thus impossible at this time to establish a two-year-old base line and use a pretest-post test design. Therefore, our procedure at age three and subsequent measures at four, five, and six will be what Campbell and Stanley (1963) describe as the "post test only control group design." This is based on the assumption of randomization of assignment to the various groups as well as the total sample reflecting the total population. Assignments to groups within the study have been on a random basis, and for the new groups, will be on a random basis. The question of whether the sample reflects the total population is far more difficult since all participants are volunteers. Those who have been with the project for several years may be somewhat different in motivation and need for achievement than the general population. We have no way of assessing this.

To test hypothesis 3, the graduate assistants assigned to the backyard centers will observe each child for a period of ten minutes a session,

relying on a Signs instrument the presence of certain behaviors. This instrument will be partly developed between this date and the project starting date, but it is expected that several months into the project, time will be required for instrument development. Therefore, the early members of the backyard center group population will be, in effect, part of an instrument development group rather than being tested on this hypothesis. Training in observation to build reliability will be part of the work of the graduate assistants. When the instrument has achieved sufficient stability and the observers sufficient reliability, it will then be used for testing the hypothesis with those children who enter the backyard center program after that time.

Hypothesis 4 will be tested on a pretest-post test basis using the Gordon How I See Myself Scale. This scale, a modification of a scale used with children and youth, was developed for the Infant Stimulation Project.

A partial answer to the earlier question of factors influencing continued participation in the project may be gleaned from an investigation of a relationship between beginning scores on these factors and attrition rate. Test scores presently exist for mothers in the original longitudinal studies for babies' age three months and age one, and will exist for mothers at babies' age two as a part of the present project. This proposal requires testing of mothers at babies' age three.

Hypotheses 5 and 6 were suggested by Professor Solon Kimbal, Graduate Research Professor of Anthropology, as a result of his background in anthropological studies of change. An interview, to be conducted by graduate students in anthropology who will be part of the graduate research assistant group, will attempt to elicit answers to such questions as: Whom do you talk with now? What do these people do? Whom did you used to talk with last year? How often do you talk with these people? and How do you spend your time? What kinds of things do you do in the community? How does this differ from what you did last year? About how much time do you spend on this? This interview will be conducted pre- and post. It will be designed to assure the mother of her anonymity in the analysis, and also explained in such a way that she has the option of refusal. The protection of the privacy of the mother and child will be assured.

At ages four, five, and six each child will again be measured on the Stanford-Binet, the Peabody, the Wallin, the Leiter and a measure of self concept. The mother will be asked to respond to the interview questions mentioned above and to the How I See Myself Scale. Since many of these children will move into other types of stimulation activities, such as Head Start, after they leave this project, an attempt will be made to see if further stimulation has a contributing effect on scores of performance and attitude. Table 4 presents the data collection plan.

C. Significance of this Research

The American society is rapidly moving to a general awareness of the importance of the early years and an acceptance of its responsibility for the

education of very young children. The recently announced Parent-Child Center program and the emerging need for Day Care challenge us to develop and test ways to provide, within economical limits, for the education of very young children. Our position is that the home is the place for the very young child and that only as the mother herself becomes competent can she in turn provide for the stimulation of subsequent children. Further, the use of the non-professional drawn from the same background is a special contribution. Although aides and advocates are used in a variety of projects, the type of professional responsibility, decision making, and role assignment of the non-professional in this project is unique. As an example the State of Florida now has a job described as "child development trainer" in the merit system as a result of this work.

We see this project fitting into the diagram developed by Hilgard (See Figure 2). Figure 2A presents our modification of Hilgard's design. We see our work covering the steps 3 through 5, with feed back to step 2 and ready adaptability to step 6. Thus, we believe this project has national significance as an approach to field utilization of scientific knowledge about learning and development in the very young child.

TABLE 4. Data Collection Plan (By Baby's Age)

Group	2	3	4	5&6
BYC/HV	Bayley HISM PPVT Interview	Stanford-Binet HISM PPVT Interview S-C Leiter Series material	S-B HISM PPVT Interview S-C Series material	S-B HISM PPVT Interview S-C Series material
	Observation/S-C PEWR			P-SI
Control	Same as above with the exception of no observation S-C and PEWR.			

1. S-C: Self-Concept
 PEWR: Parent Educator Weekly Home Visit reports
 P-SI: Pre-School Inventory, ETS, developed by Caldwell
 HISM: How I See Myself

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